CLAIMS

We claim:

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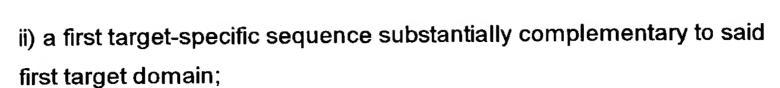
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- 1. A method of detecting a first target sequence comprising a poly(A) sequence in a sample comprising:
 - a) hybridizing a first probe to said target sequence to form a first hybridization complex, said first probe comprising:
 - i) an upstream universal priming site (UUP);
 - ii) an adapter sequence;
 - iii) a first target-specific sequence; and
 - iv) a downstream universal priming site (DUP);

wherein said poly(A) sequence remains single-stranded;

- b) contacting said first hybridization complex with a support comprising a poly(T) sequence, such that said poly(A) sequence hybridizes with said poly(T) sequence;
- c) removing unhybridized first probe sequences;
- d) denaturing said first hybridization complex;
- e) amplifying said first probe to generate a plurality of amplicons;
- f) contacting said amplicons with an array of capture probes to form assay complexes; and
- g) detecting said assay complexes.
- 2. A method according to claim 1 wherein said first probe comprises a label.
- 3. A method according to claim 2 wherein said label is a primary label.
- 4. A method according to claim 3 wherein said primary label is a fluorescent label.
- 5. A method according to claim 2 wherein said label is a secondary label.
- 6. A method according to claim 2 wherein said label is biotin.
- 7. A method of detecting a first target sequence comprising a first target domain, a second adjacent target domain and a poly(A) sequence, said method comprising:
 - a) hybridizing a first probe comprising:
 - i) an upstream universal priming site (UUP); and

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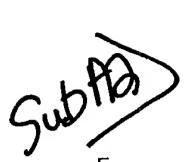


to said first target domain;

- b) hybridizing a second probe comprising:
 - iii) a second target-specific sequence substantially complementary to said second target domain;
 - iv) a downstream universal priming site (DUP);

wherein at least one of said first and second probes comprises at least a first adapter sequence, said poly(A) sequence remains single-stranded, and said target sequence and said first and second probes form a ligation complex;

- c) contacting said ligation complex with a ligase to form a ligated complex;
- d) contacting said ligated complex with a support comprising a poly(T) sequence, such that said poly(A) sequence hybridizes with said poly(T) sequence;
- e) removing unhybridized first and second probe sequences;
- f) denaturing said ligation complex;
- g) amplifying the ligated first and second probes to generate a plurality of amplicons;
- h) contacting said amplicons with an array of capture probes to form assay complexes; and
- i) detecting said assay complexes.
- 8. A method according to claim 7 wherein said first target domain and said second target domain are directly adjacent.
- 9. A method according to claim 7 wherein said first target domain and said second target domain are separated by at least one base and said method further includes contacting said ligation complex with a polymerase and at least one dNTP.
- 10. A method according to claim 7 wherein one of said first and second probes comprises a label.
- 11. A method according to claim 10 wherein said label is a primary label.
- 12. A method according to claim 11 wherein said label is a fluorescent label.
- 13. A method according to claim 10 wherein said label is a secondary label.
- 14. A method according to claim 13 wherein said secondary label is biotin.



- 15. A method according to claim 1 or 7 wherein said amplifying is done by:
 - a) hybridizing a first universal primer to said UUP;
 - b) providing a polymerase and dNTPs such that said first universal primer is extended;
 - c) hybridizing a second universal primer to said DUP;
 - d) providing a polymerase and dNTPs such that said second universal primer is extended; and
 - e) repeating steps a) through d).
- 16. A method according to claim 1 or 7 wherein said array comprises:
 - a) a substrate with a patterned surface comprising discrete sites; and
 - b) a population of microspheres comprising at least a first subpopulation comprising a first capture probe and a second subpopulation comprising a second capture probe.
- 17. A method according to claim 16 wherein said discrete sites comprise wells.
- 18. A method according to claim 16 wherein said substrate comprises a fiber optic bundle.
- 19. A method according to claim 1 or 7 wherein said support comprising a poly(T) sequence comprises magnetic beads.

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